

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl No. : 09/684,859

Confirmation No. 2823

Applicant : Masahiro Sone  
Filed : October 5, 2000

Title : SYSTEM AND METHOD FOR CONTINUOUS DELIVERY SCHEDULE  
INCLUDING AUTOMATED CUSTOMER NOTIFICATION

TC/A.U. : 3623  
Examiner : Michael C. Heck

Docket No. : 33108/DBP/F179

Customer No. : 23363

**DECLARATION UNDER 37 CFR §1.131**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Post Office Box 7068  
Pasadena, CA 91109-7068

Commissioner:

I, Masahiro Sone, declare and state as follows:

1. I believe that I am the original, sole inventor of the subject matter described and claimed in the above-identified application.

2. On or before August 6, 1999, I conceived the invention claimed in this application. I then prepared an invention disclosure generally describing exemplary embodiments of the invention and presented the invention disclosure to our patent attorney, John W. Eldredge of Christie, Parker & Hale, in a meeting held on or before August 6, 1999. A true and correct copy of the invention disclosure, except for the date which has

**Appln No. 09/684,859**  
**Declaration under §1.131**

been redacted, and the handwritten markings, is attached hereto as Exhibit A to this Declaration.

3. I worked diligently with our patent attorney to prepare a patent application describing and claiming the subject matter set forth in the invention disclosure. A draft of the patent application was forwarded to me by our patent attorney with a letter dated December 10, 1999. A true and correct copy of this letter and the draft patent application, except for the handwritten markings, is attached hereto as Exhibit B to this Declaration.

4. Upon receipt of the draft patent application I reviewed the application and drawings for completeness and accuracy. Following my review, I made corrections where appropriate and forwarded them to our patent attorney for incorporation into the patent application.

5. I received a finalized patent application with an email dated May 23, 2000, incorporating my revisions, and thereafter executed the patent application on October 3, 2000. A true and correct copy of this email is attached hereto as Exhibit C to this Declaration.

6. On October 5, 2000, the final patent application was filed with the U.S. Patent and Trademark Office.

7. I declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United

**Appln No. 09/684,859**  
**Declaration under §1.131**

States Code and such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: Aug 03, 2005 By: Masahiro Sone  
Masahiro Sone

JEC/mac  
Attachments: Exhibits A, B, C

LAL PAS630433.1--\*-06/28/05 3:34 PM

# Invention disclosure report

Masahiro Sone  
Fujitsu-ICL Sys. Inc.

## 1. Title

Delivery time notification system which is possible to change delivery time and location just before delivery

## 2. Abstract

Online ordering and home delivery of grocery is coming popular. But there are several problem to make delivery. And it is still inconvenient.

The most big inconvenience is that consumer can not know the exact time of delivery. And for delivery company, the problem is that when they arrived a home to delivery, there is no one who receives deliverables.

This invention will solve this problem using new computer and network technology.

The objectives of this invention are

To notify the times slot of delivery more exactly in several ways such as via internet, via cellular phone and via pager.

To give a chance changing delivery time just before truck arrives her home.

To notify the cost to change the delivery time along with the time she requests.

## 3. Suggested Claims

- 1) Delivery Scheduling Computer that have information of delivery schedule.
- 2) Delivery Scheduling Computer, which is capable to calculate delivery usually, based on mileage.
- 3) Delivery Scheduling Computer that is connected to customers PC via such as Internet.
- 4) Delivery Scheduling Computer which is connected to mobile PC via RF network to send /receive delivery related information.
- 5) Delivery Scheduling Computer that is capable to re-calculate estimated delivery time based on actual delivery time for previous customer.
- 6) Mobile PC located at delivery truck or held by delivery man which is capable to store delivery related information such as delivery order, estimated delivery time, actual delivery time and status. Status column have at least three status, waiting, in progress and done.
- 7) Mobile PC which have real time clock. And when status is changed to done, the updated status will be sent to Delivery Scheduling Computer with time stamp. Then Delivery

- Scheduling Computer update delivery schedule stored in it.
- 8) Delivery Scheduling Computer which is capable to call customers pager or cellular phone in advance of delivery. Customer is possible to define how many minutes will she get call in advance.
  - 9) Delivery Scheduling Computer, which is capable to get request from customer about change of delivery time and/or location. And Delivery Scheduling Computer can calculate the cost of change usually based on mileage increase. This cost is informed to customer to confirm if he/she accept the cost to be charged.
  - 10) Delivery Scheduling Computer is possible to get change request several type of connection such as Internet, cellular and pay phone. Incase of payphone and cellular, change operation is done using number key of phone.

## **4.Details**

### **4.1 Delivery time notification**

The customer's, for example Mrs. Robert's, PC is connected to Store via Internet. The customer can order grocery via Internet and will have estimated delivery time slot for example between 1PM and 3PM.

The delivery truck is equipped with mobile PC and radio connection to store. There is a data in the mobile PC which includes customer name, estimated delivery time, actual delivery time and status. Also the order of each line is same as order of delivery sequence. Once delivery was made, the delivery man will change the status to 'Done' and actual delivery time is stored to the column.

This information is sent from truck to store via RF connection. And the information in the computer at store will be updated.

If the actual delivery time is different from estimated delivery time, the estimated delivery time of following customers will be shifted along with the actual delay of delivery. This re-calculation will be made continuously on each delivery.

In this way, the estimated delivery time will be exact.

Customer can get most exact delivery time in several ways.

- 1) Customer's PC which is connected to store via Internet will get latest estimated delivery time continuously. It is very convenient for customer. Because if customer only knows the time slot for example between 1PM and 3PM, she have to be in home from 3PM until delivery time. But as a result of this invention, customer can get more exact delivery time for example 14:10+10Min, she can go out between 1PM through 2PM.
- 2) Customer can get call to pager before customer defined time from delivery. For example when customer defined 25 minutes, Delivery Scheduling Computer will call customer's pager before 25 minutes from latest estimated delivery time. It is also possible for customer to get call for customer's cellular phone.

It is very convenient for customer. Because customer doesn't have to wait in her home until estimated delivery time is notified. For instance if it takes 15 minutes from her office to home, she can get call 20 minutes advance from estimated delivery. Then she can minimize the time loss.

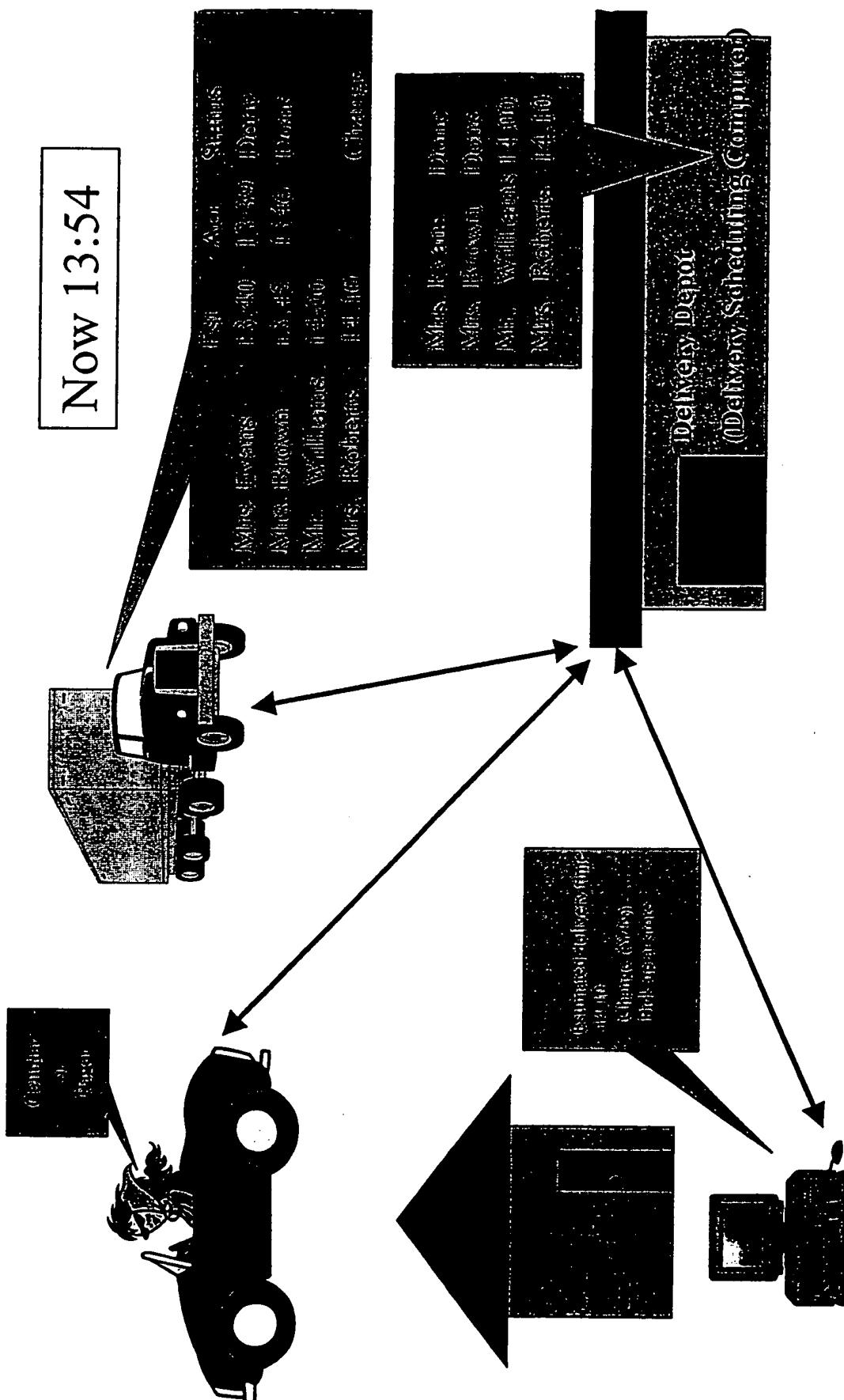
#### 4.2 Change of delivery time and/or location

Some time it will be impossible for customer to stay in home or back to home before delivery time. In that case this invention will make it possible to customer to change the delivery time or location. It works as follows:

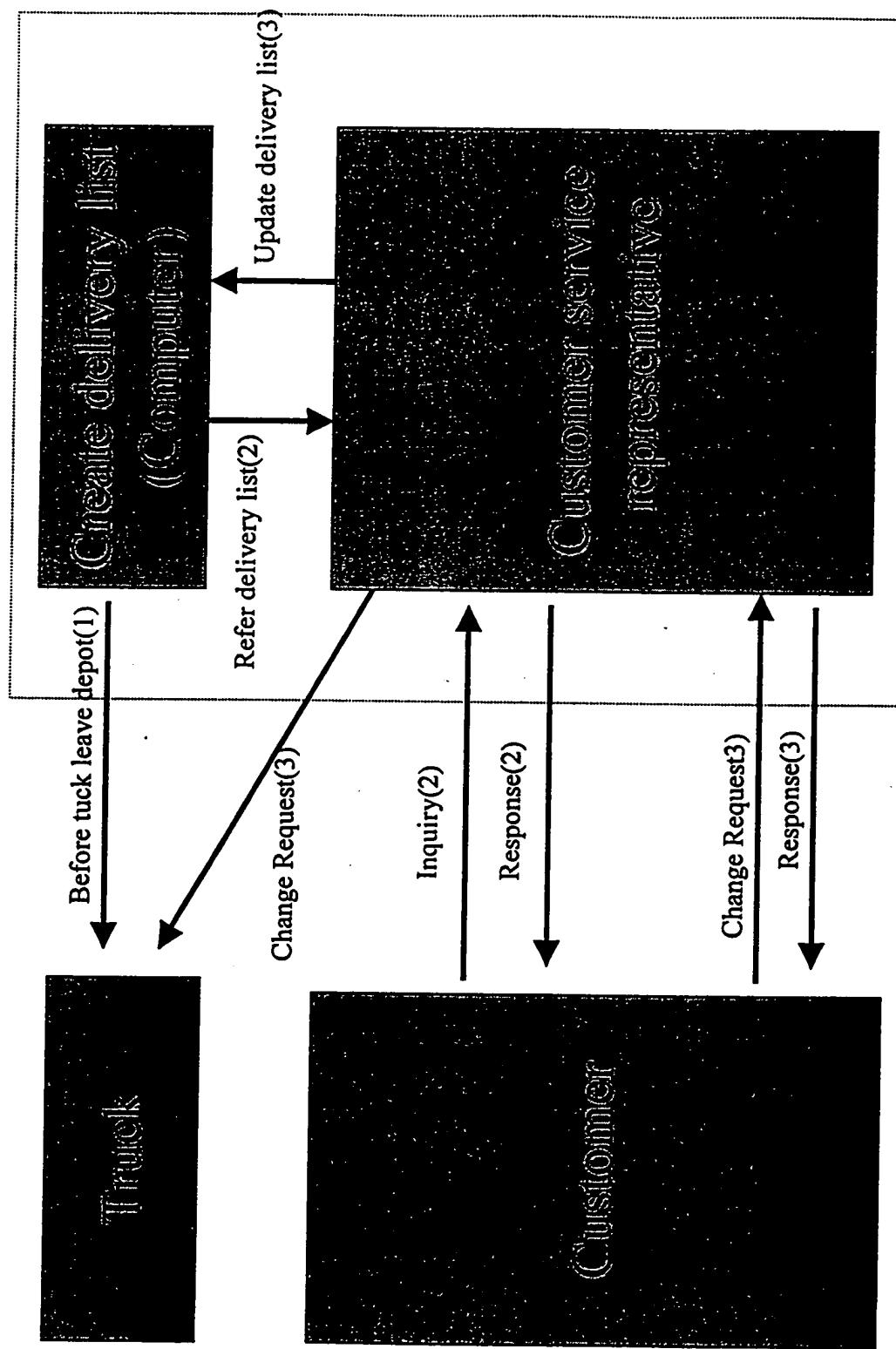
- 1) When customer find that she have to leave home 1 hour before the estimated delivery time, she operates her home PC to send request of delivery time change to Delivery Scheduling Computer. Then Delivery Scheduling Computer update the data of delivery schedule, and send to mobile PC at delivery truck. Then truck will cancel the delivery on original delivery time and will delivery new requested time slot.
- 2) Some time it is more convenient for customer to pick-up at store than change home delivery time. In that case, customer can send that request to Delivery Scheduling Computer, and Delivery Scheduling Computer command truck to carry back the deliverables of requested customer to store. Then customer can pick up merchandise at store. In this case, customer can get estimated time when her merchandise will be back to store.
- 3) Some time the change of delivery time and sequence will cost. And this cost will be charged to customer. When Delivery Scheduling Computer received the request of time change, Delivery Scheduling Computer re-schedules the delivery order of truck. And it is possible for Delivery Scheduling Computer to calculate the increase of truck mileage. For example, the increase of mileage is 3 miles, that cost \$2.50. Then Delivery Scheduling Computer can confirm if customer accept this additional charge to customer. When it is accepted by customer, new delivery order will be sent to mobile PC at truck.

# Invention Overview

Now 13:54



# Block Diagram (Legacy system)



# Explanation (Legacy delivery system)

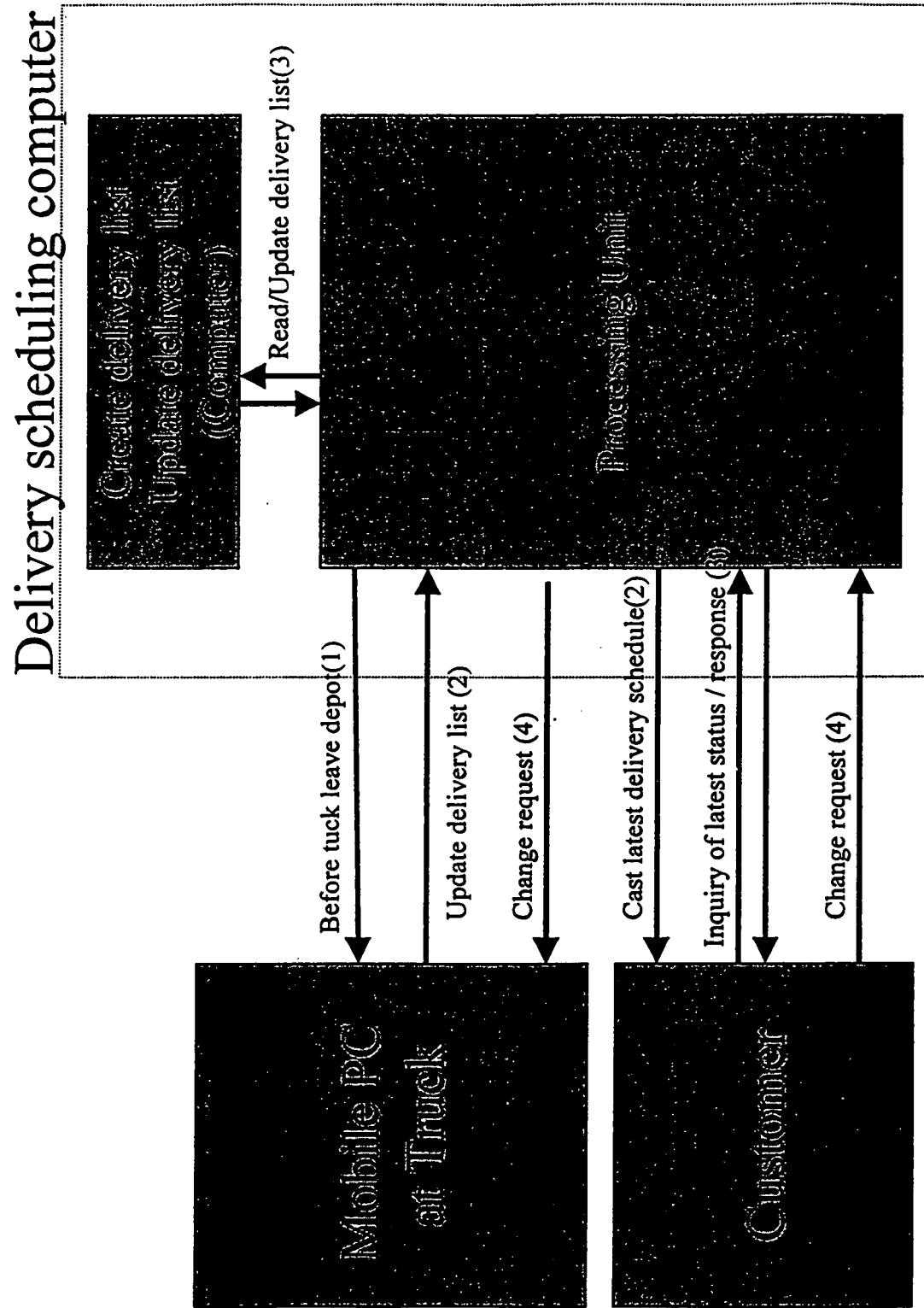
- (1) A computer create delivery list based on order list. Delivery list is a table that includes following items.

Customer ID  
Customer name  
Customer Address  
Sequence of delivery  
Estimated delivery time

Then this table is copied to mobile PC located truck before leaving depot.

- (2) When customer inquire delivery status via phone , customer service refer the delivery list. Then customer service respond the information to customer. But this information is not updated based on progress of delivery.
- (3) When customer request change of delivery time or location, customer call to customer service. Then customer service call to delivery delivery man at truck via RF or cellular phone. Then delivery man change the delivery schedule for this customer. Also customer service update the delivery list.

# Block Diagram (New System)



# Explanation (New system)

- (1) A computer create delivery list based on order list. Delivery list is a table that includes following items.

Customer ID  
Customer name  
Customer Address  
Sequence of delivery  
Estimated delivery time  
Actual delivery time (Blank at creation)  
Status (Waiting /In progress/Done)  
Prior notify (Minutes, Destination such as cellular phone No.)

Then this table is copied to mobile PC located truck before leaving depot.

- (2) When delivery is made, time stamp is sent to Delivery Scheduling Computer. And delivery list is updated. At same time, latest estimated delivery time is sent or cast to customer. When customer requesting prior notify option, Processing Unit automatically call defined destination such as cellular phone.
- (3) When customer inquire the status, latest estimated delivery time is notified from Delivery Scheduling Computer which have latest information.

# Explanation (New system)

- (4) When customer request change of delivery time or location, customer call or send information to Processing Unit. Then Processing Unit send this request to mobile PC at truck. At same time, Processing Unit update delivery list.  
In case this change cause additional cost, Processing Unit send estimated cost based on additional mileage of truck.
- <Example>
- A customer request later delivery. Then delivery for this customer is queued to end of delivery list. Then Delivery Scheduling Computer recalculate total mileage of this truck. Total mileage is increased 3 miles. Then this customer charged \$3.00.  
(In this example, additional cost is calculated \$1.00 / 1 mile)

D BRUCE PROUT  
HAYDEN A. CARNEY  
RICHARD J. WARD, JR.  
LEROY T. RAHN  
WALTER G. MAXWELL  
WILLIAM P. CHRISTIE  
DAVID A. DILLARD  
THOMAS J. DALY  
VINCENT G. GIOIA  
THEODORE A. PIANKO  
EDWARD R. SCHWARTZ  
JOHN D. CARPENTER  
WESLEY W. MONROE  
DAVID A. PLUMLEY  
JOHN W. ELDREDGE  
GREGORY S. LAMPERT  
JAMES E. DOROSHOW  
MARK GARCIA  
GRANT T. LANGTON  
SYED A. HASAN  
DANIEL R. KIMBELL  
CONSTANTINE MARANTIDIS  
MARILYN R. KHORSANDI  
CRAIG A. GELFOUND  
DANIEL M. CAVANAGH  
GARY J. NELSON  
KATHLEEN M. OLSTER\*  
JOSEPHINE E. CHANG  
ALBERT J. HARNOIS, JR.  
JOEL A. KAUTH  
PATRICK Y. IKEHARA

PETER J. REITAN  
CHARLES R. HALLORAN  
RAYMOND R. TABANDEH  
LUCINDA G. AUCIELLO  
PAUL B. HEYNSENS  
PHUONG-QUAN HOANG  
KATHY MOJIBI  
GARY S. DUKARICH  
CYNTHIA A. BONNER, Ph.D.  
JOHN F. O'ROURKE\*\*

OF COUNSEL

R. WILLIAM JOHNSTON  
RUSSELL R. PALMER, JR.  
RICHARD D. SEIBEL  
ROBERT L. TOMS, SR.  
THERESA W. MIDDLEBROOK

PATENT AGENTS

MOLLY A. HOLMAN, Ph.D.  
NORMAN E. CARTE  
JUN-YOUNG E. JEON  
MARC A. KARISH

TECHNICAL SPECIALISTS

STEPHEN E. JOHNSON, Ph.D.  
PETER A. NICHOLS

\*ADMITTED ONLY IN PA

\*\*ADMITTED ONLY IN PA, DC

# CHRISTIE PARKER & HALE

LLP

Intellectual Property  
Lawyers

REPLY TO PASADENA

December 10, 1999

PASADENA OFFICE  
350 WEST COLORADO BOULEVARD  
SUITE 500  
PASADENA, CALIFORNIA 91105  
POST OFFICE BOX 7068  
PASADENA, CALIFORNIA 91109-7068  
TELEPHONE: (626) 795-9900  
FACSIMILE: (626) 577-8800  
E-MAIL: info@cph.com

ORANGE COUNTY OFFICE  
5 PARK PLAZA, SUITE 1440  
IRVINE, CALIFORNIA 92614  
TELEPHONE: (949) 476-0757  
FACSIMILE: (949) 476-8640

JAMES B. CHRISTIE (1904-1959)  
ROBERT L. PARKER (1920-1980)

OUR REFERENCE

F179:33108

Privileged and Confidential

Via Federal Express

Mr. Nasahiro Sone  
c/o Mr. Kunihiko Matsumori  
FUJITSU-ICL SYSTEMS INC.  
11085 North Torrey Pines Road  
La Jolla, California 92037

**Re: U.S. Patent Application Entitled: System And Method For Continuous Delivery Schedule Including Automated Customer Notification  
Your Ref. No. FIRST98011 / 98-05676FIRST**

Dear Mr. Sone:

Enclosed is a copy of a draft patent application which we prepared for your **System And Method For Continuous Delivery Schedule Including Automated Customer Notification.**

Please review the draft application for technical accuracy and content. Since the application is in draft form, please feel free to mark it up if you have any corrections or comments that you feel need to be included. After your review, please return the draft to me so that I can prepare a final version suitable for filing with the U.S. Patent and Trademark Office.

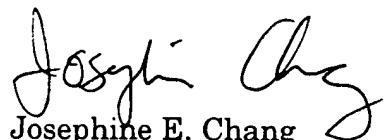
You will note that although the application is complete with the exception of the claims, the drawings are still informal. After I receive your comments, preparing a final version of the specification with the claims and formal drawings will take less than one day.

Mr. Masahiro Sone  
FUJITSU-ICL SYSTEMS INC.  
December 10, 1999  
Page 2

CHRISTIE  
PARKER  
& HALE  
LLP

If you have any questions or comments, please do not hesitate to contact me.

Sincerely,

  
Josephine E. Chang

JEC/mac  
cc: Dan Ferris

MAC PAS222429.1 • 12/10/99 2:27 PM

SYSTEM AND METHOD FOR CONTINUOUS DELIVERY SCHEDULE  
INCLUDING AUTOMATED CUSTOMER NOTIFICATION

5

FIELD OF THE INVENTION

The present invention relates generally to delivery scheduling systems, and more particularly, to a system and method for continuously monitoring and updating a delivery schedule, and 10 notifying a customer of a scheduled delivery.

BACKGROUND OF THE INVENTION

The expansion of personal computers into homes of average consumers has also expanded the usage of the Internet by such 15 consumers, and with it, has opened a new avenue of shopping, specifically, Internet shopping. The Internet, and specifically, the World Wide Web, provides convenient purchasing abilities from one's home, with a simple click of a mouse. Thus, practically anything imaginable, from groceries to a car, may now be 20 purchased via the Internet.

However, unlike conventional shopping where a customer visits a store, purchases an item, and leaves the store with the item purchased, a person shopping over the Internet does not leave with the goods purchased when he or she logs off the 25 computer. The goods purchased must be processed and delivered to the customer via a delivery service.

Other non-Internet companies, such as mail-order companies, also rely heavily on delivery services to distribute items purchased by consumers. Even conventional retail stores provide 30 delivery services to customers for items that are not easily transportable, such as furniture, appliances, and the like.

Thus, the volume of items delivered by delivery services like U.S. Postal Service, United Parcel Service, Federal Express, and the like, has increased substantially, and with it, the 35 pressure to be efficient and prompt in making the scheduled

1 33108/JEC/F179

5 deliveries. Such efficiency and promptness is beneficial to both  
the delivery services as well as to customers, increasing  
customer satisfaction and encouraging purchase of items via the  
Internet.

10 Efforts have been made in the prior art to increase  
efficiency of certain delivery services. For instance, there  
exists in the prior art a self-monitoring mail delivery system  
wherein mail is tracked as it passes through multiple delivery  
stages. A schedule is created of expected arrival times at each  
stage. Should a mail piece not arrive on time, the system is  
alerted to initiate a search for the late or missing mail piece,  
or to take other corrective action, such as expediting delivery  
of late pieces. A data center monitors the operations and  
provides management information to help enhance deliveries.

15 The prior art also discloses a method and apparatus for  
monitoring the dispatching of scheduled mail, as well as for  
coordinating the receipt of new mail with common carrier dispatch  
schedules. Specifically, the prior art discloses a methodology  
by which mail is organized in terms of zip codes so that a mail  
run is able to arrive at a dispatch station "just-in-time" to be  
loaded onto a common carrier's vehicle. The prior art also  
discloses a post run analysis system which reviews the results  
20 of a mail production run in order to determine how effectively  
mail production was scheduled or whether certain mail production  
runs were completed too late in to conveniently meet the common  
carrier dispatch schedules. If this is the case, the mail  
production schedule is revised.

25 30 Despite efforts in the prior art, delivery services are  
still inconvenient for average consumers for several reasons.  
First, customers usually have no idea as to when a delivery is  
to be made, resulting in missed deliveries if there is no-one to  
receive the delivered merchandise. A missed delivery is not only  
35 detrimental to the customer, but also detrimental to the delivery

1 33108/JEC/F179

service that would have re-directed the time and the resources expended to making a delivery which could have been successful.

5 Even if an estimated time of delivery is provided, such estimation is crude and not very accurate. Thus, for many items expected for delivery, customers end up postponing or canceling appointments, errands, and/or other duties to remain at the delivery location so that a delivery is not missed.

10 A second drawback to existing delivery services is that delivery service schedules are inflexible from the point of view of the customers. Once an item ordered is on the process of being delivered, the customer has no ability to change the delivery time, or request that the delivery be made to a different location.

15 Accordingly, there is a need for a delivery schedule system which continuously tracks delivery schedule times and notifies customers of a scheduled delivery prior to the making of a delivery. If the customer is not at home, or wants to change the 20 delivery time or location, the system should allow such change and modify the delivery schedule accordingly.

#### SUMMARY OF THE INVENTION

The present invention addresses and alleviates the above-25 mentioned deficiencies associated with the prior art. More particularly, the present invention comprises a system which continuously monitors and updates delivery schedules based on completed deliveries and modifications made by the customers.

In accordance with one aspect of the invention, the delivery 30 scheduling and updating system includes a delivery scheduling computer, a user computer, and a network linking the delivery scheduling computer to the user computer. The delivery scheduling computer electronically stores and updates delivery schedule information. Prior to a scheduled delivery, the 35 delivery scheduling computer notifies the customer of an

estimated time of the delivery. The customer receives the delivery notification via the user computer. If the customer  
5 desires to make a change to the delivery, such as the time of the delivery or the delivery location, the customer uses the computer to transmit a delivery change request. A set of user application modules associated with the delivery scheduling computer and the user computer allows the user to view the delivery notification  
10 and enter the delivery change request.

In another aspect of the invention, the customer receives delivery notifications and/or enters delivery change requests via a telephone, cellular phone, pager, or a set-top box.

In a further aspect of the present invention, system also  
15 includes an employee computer for receiving updated delivery schedule information from the delivery scheduling computer. The employee then makes deliveries according to the delivery schedule received. Upon completion of a scheduled delivery, the employee uses the employee computer to transmit a delivery completion  
20 message to the delivery scheduling computer. The delivery completion message includes an actual delivery time which the delivery scheduling computer uses to update the estimated delivery times of the remaining deliveries. In this way, their delivery times may be more accurately determined.

25 It will be appreciated that the system and method according to the present invention provide a significant improvement in the quality and efficiency of delivery services. Customers no longer need to wait at home for a scheduled delivery which may or may not be made on time. If the customer is not at the scheduled  
30 delivery location when notification of the delivery is made, the customer may alter the time or location of the delivery. Thus, delivery services no longer have to make unsuccessful delivery efforts, and may reorganize their schedules and times to ensure the most efficient and successfully delivery.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects and advantages of the  
5 present invention will be more fully understood when considered  
with respect to the following detailed description, appended  
claims and accompanying drawings wherein:

FIG. 1 schematic block diagram of an exemplary delivery  
schedule and notification system including a delivery scheduling  
10 computer;

FIG. 2 is a schematic layout diagram detailing the  
organization of delivery schedule information maintained by the  
delivery scheduling computer of FIG. 1;

FIGS. 3A-3B are exemplary flow diagrams of a delivery  
15 scheduling and update process executed by the delivery scheduling  
computer of FIG. 1;

FIG. 4 is an illustration of a screen with delivery schedule  
information for a delivery employee;

FIG. 5 is an exemplary layout of a display screen for  
20 displaying delivery schedule information to a customer; and

FIG. 6 is a flow diagram of a touch-tone response program  
for delivering and receiving delivery change requests over the  
phone.

25 DETAILED DESCRIPTION OF THE INVENTION

In general terms, the present invention is directed to a  
delivery schedule and notification system for use by delivery  
services such as the U.S. Postal Service, United Parcel Service,  
Federal Express, courier services, retail delivery services, and  
30 other types of local and international delivery services.

FIG. 1 depicts a schematic block diagram of an exemplary  
delivery schedule and notification system. The system comprises  
a delivery scheduling computer 10 for creating and updating one  
or more delivery schedules. The delivery scheduling computer 10  
35 includes a mass storage device 36 for storing a database of

delivery schedule information. The mass storage device may take the form of a hard disk drive or drive array.

5 The delivery scheduling computer 10 communicates with remote customers and delivery employees over a wide area network, such as the Internet, using wired communication or RF communication. According to one embodiment of the invention, the delivery scheduling computer 10 uses an Internet connection 12 for  
10 communicating with a remote customer's personal computer 14 or set-top box 16. The Internet connection 12 might comprise telephone lines, ISDN lines, DSL lines, cable connection and the like.

Customers and delivery employee also have access to hand-held computers ("HHCs") 18, 32 that transmit and receive information to and from the delivery scheduling computer 10. The HHCs 18, 32 include wireless modems (not shown) which communicate with a wireless network service 20 through RF signals. The HHCs 18, 32 may also include a conventional phone modem for wired communication with the delivery scheduling computer 10. In addition, the HHCs 18, 32 include a touch screen 18a and a stylus 18b or tiny QWERTY keyboard 18c for allowing user input into the HHC. The HHCs 18, 32 may alternatively be replaced with a hand-held device acting as a mobile, one-way wireless monitor receiving scheduling data from the delivery scheduling computer 10.

In yet another embodiment of the invention, the HHCs 18, 32 are replaced with a browser-based client having Internet connection capabilities. Customers and employers use the browser-based client to log into the delivery scheduling computer 10 and access applications and information directly from the mass storage device 36.

The delivery scheduling computer 10 also transmits and receives information related to the delivery schedules to and  
35 from the remote customers via a conventional telephone 22 which

5 communicates with a conventional telephone network 24, or a wireless phone 26 or pager 28, which communicates with a cellular telephone network 30. The delivery scheduling computer 10 includes an automatic dialing routine and voice synthesizer for automatically initiating telephonic communication with the customer. Alternatively, a customer service representative 34 with access to the delivery scheduling computer 10 manually 10 initiates the telephonic communication. In yet another alternative, a separate server referred to as a computer telephony integration (CTI) server 35 includes logic for automatically receiving and processing the telephone calls.

15 Once communication between the delivery scheduling computer 10 and a remote customer is established via any of the above described methods, the delivery scheduling computer 10 transmits relevant portions of the delivery schedule information stored in the mass storage device 36 to the remote customers. This information includes, for instance, an estimated time in which 20 delivery is to be made to the customer. In this way, customers are alerted of a delivery prior to its attempt.

25 In addition, a customer may request changes to the delivery, such as the time of the delivery and the delivery location. Upon receipt of such a request, the delivery scheduling computer 10 calculates the costs associated with making the change, typically based on a mileage increase. The increased cost is communicated to the customer in order to confirm that the customer will accept the additional cost. Upon acceptance of the additional cost, the delivery scheduling computer 10 modifies the delivery schedule 30 to reflect the change.

The delivery employee makes deliveries according to the delivery schedule received from the delivery scheduling computer 10. The initial download of the delivery schedule might be wired or wireless. Thereafter, any updates to the delivery schedule 35 while the employee is on the road is transmitted via RF signals.

Alternatively, if the delivery employee uses the browser-based client instead of the HHC 32, the employee establishes a connection to the delivery scheduling computer 10 and accesses the delivery schedule data directly from the computer's mass storage device 36. The browser displays the up-to-date delivery schedule as the changes are made in the mass storage device 36.

Upon completion of a particular delivery on the delivery schedule, the delivery employee transmits to the delivery scheduling computer 10 a delivery completion message including the actual time of the delivery. According to one embodiment of the invention, the HHC's internal clock time-stamps the delivery completion message prior to its transmission to the delivery scheduling computer 10, and the actual delivery time is deemed to be the time stamped on the delivery completion message. In an alternative embodiment, the employee manually enters the actual time of delivery when transmitting the delivery completion message.

Upon receipt of a delivery completion message, the delivery scheduling computer 10 recalculates the estimated delivery times of the remaining deliveries and transmits a modified schedule information to the delivery employee. Thus, estimated delivery times for the remaining deliveries can be more accurately predicted. Modifications to the schedule information due to the changes requested by the customer are also transmitted to the employee.

FIG. 2 is a schematic layout diagram detailing the organization of delivery schedule information in the mass storage device 36. The schedule information is maintained in a delivery schedule table 50 as a series of scheduled delivery entries. One or more tables 50 may be maintained for different delivery routes, employees, days of the week, and the like.

Each delivery entry includes a unique customer identifier (customer ID) 50a. The customer ID 50a is associated with a

particular customer name stored in a customer name field 50b. Each delivery entry further includes a delivery address field 50c 5 for storing the address to which the delivery is to be made. A delivery sequence field 50d indicates the order in which the delivery is to be made. The order of the deliveries are calculated based on an estimated delivery time stored in an estimated delivery time field 50e. The actual time of the 10 delivery is stored in an actual delivery time field 50f.

In addition to the above, each delivery entry also includes a status field 50g and a prior notify field 50h. The status field 50g indicates the status of the delivery as waiting (W), done (D), or in progress (P). The prior notify field 50h 15 indicates the amount of prior notice requested by the customer before a delivery is attempted. If no such request has been made, a default time is entered (e.g. 30 minutes). The prior notify field further includes a telephone number, pager number, e-mail address, and the like, where notification of a delivery is to 20 be made.

FIGS. 3A-3B are exemplary flow diagrams of a delivery scheduling and update process executed by the delivery scheduling computer 10 of FIG. 1. The process is described in terms of a computer program. The program starts and in step 60, creates a 25 delivery schedule for a particular day and region. In doing so, the delivery scheduling computer 10 may present to the user a set of available times that the customer may choose for delivery. For instance, a customer ordering groceries via the Internet, 30 may, at the time the order is placed, have a choice of a delivery day, as well as a set of delivery times on that day (e.g. between 9:00 am and 12:00 pm, or between 3:00 pm and 6:00 pm.) The present invention is also applicable, however, to situations where a customer does not or cannot specify a particular date or time of delivery, such as when the delivery is to be made as soon

as the delivery order is received by the delivery service provider (e.g. packages sent by UPS, U.S. Mail, and the like).

5 The delivery scheduling computer 10 creates a delivery schedule based on one of the typical routing algorithms known in the art. According to one embodiment of the invention, the delivery schedule is based on a shortest-path algorithm which organizes the deliveries so that a total amount of mileage  
10 traveled by the delivery employee is minimized. In this regard, the program takes a list of deliveries to be made for the selected route, and determines the distance from the delivery headquarters to each delivery location. The program selects the delivery with the shortest mileage from the delivery headquarters  
15 as the first delivery. The program then computes the distance from the first delivery location to the remaining delivery locations, and selects the delivery with the shortest mileage as the second delivery. This process continues until all the deliveries have been assigned a delivery sequence. The shortest-path algorithm, therefore, creates a delivery sequence which will  
20 make the deliveries as efficient as possible. A person of skill in the art should appreciate, however, that other known routing algorithms may also be used to create the routing schedule without departing from the scope and spirit of the present  
25 invention.

The program next computes the estimated delivery times for each of the deliveries based on the assigned delivery sequence. In its simplest form, an estimated delivery time is calculated based on a distance to a particular delivery location from a  
30 destination location. The delivery predictions may be made more accurate by taking into account other factors, such as the amount of time expected to be spent at each delivery location, rush hour considerations, amount of deliveries to be made at each location, and the like.

5 The program next decides if any of the deliveries have been requested to be delivered within a certain delivery period. If such requests have been made, and the estimated delivery time is not within the specified delivery period, the program selects the deliveries whose estimated delivery times are not within the specified delivery periods and moves them up or down in the sequence of deliveries as necessary. The estimated delivery 10 times of the deliveries affected by the change in sequence are also recalculated accordingly.

Once a delivery schedule has been created, the delivery schedule information is entered into the scheduling table 50 (FIG. 2) in step 61, and stored in the system's mass storage 15 device 36. The status field 50g of all the deliveries are further initialized with a "waiting" status indicator. In step 62, the delivery schedule is downloaded to the delivery employee's HHC 32, and the employee may now begin to make the scheduled deliveries.

20 The program constantly monitors the delivery schedule during the delivery process and makes appropriate notifications and updates to the delivery schedule. Accordingly, the program, in step 64, retrieves a delivery entry from the scheduling table 50 for which a delivery is to be made. The status of this delivery 25 is changed to "in progress" and stored in the delivery entry's status field 50g. In step 66, the program notifies the customer of the delivery prior to the making of the delivery. In doing so, the program examines the prior notify field 50h for the delivery for determining how far in advance the notification 30 should be made. The notification is made by initiating automatic or manual telephonic communication with the customer's telephone, cellular phone, or pager. Alternatively, the notification is transmitted to the customer's HHC 18, PC 14, or STB 16 via wireless or wired communication. For example, the notification

may be sent to the customer's e-mail address, or displayed on a ticker on the customer's browser.

5 In step 74, the program inquires whether a customer has placed a request for a different delivery time or location. The customer may also indicate that no delivery is necessary, and that the customer will do a pick-up of the goods to be delivered from the delivery headquarters. A customer might make such a  
10 request upon receipt of a delivery alert. Alternatively, the customer may access the estimated delivery schedule time via the Internet, telephone, or other communication means, prior to the receipt of the delivery alert. For example, a customer using the browser-based client may at any time log onto the delivery scheduling computer 10 and view a current estimated delivery time. If the delivery is still ~~pending~~ <sup>waiting to be delivered</sup>, the customer may then submit a request to change a delivery parameter.

If the customer has requested to change a delivery, the program, in step 70, calculates the cost change to make the new delivery. The cost change is generally based on the mileage increase due to the request. Alternatively, if no mileage increase is caused by the request, a flat service fee might be assessed to process the request. In yet another alternative, the change may be processed free of charge for a predetermined number of times for frequent shoppers, such as up to three times  
25 a month.

In step 72, the program modifies the customer's bill to reflect the change in the cost. In step 74, the program determines if the request has created a change in the delivery schedule. If the answer is YES, the program, in step 76, revises the schedule table 50 and transmits the revised schedule to the delivery employee. In this regard, the program first determines if the change is in the delivery time or location. If the change is in the delivery time, the program moves the delivery up or  
35

down in the delivery sequence and re-calculates the estimated delivery times for the remaining deliveries accordingly.

5 If the change is in the delivery location, the program again re-calculates the estimated delivery time for the changed delivery as well as the remaining deliveries. The program further calculates the increase in total mileage that the delivery employee will need to travel due to the change of  
10 location.

If the customer has instead indicated that he or she is to do a pick-up of the goods, the entry for the delivery is ~~deleted~~ from the schedule table 50. The estimated delivery times of the remaining deliveries are also updated accordingly.

15 According to one embodiment of the invention, the calculation of the revised costs, the revision of the customer billing, and the revision of the delivery schedule table 50 occurs only if the customer accepts the increased costs.

The program further inquires in step 78 whether a delivery completion message was received by the delivery employee. An employee transmits such a message after a delivery with a status of "in progress" has been completed. As discussed above in conjunction with FIG. 1, the delivery completion message includes an actual delivery time, and is transmitted using the employee's  
25 HHC 32 or browser-based client. It is noted, however, that any other traditional means of communication, such as a two-way radio or telephone, may be utilized instead of the HHC 32 to submit the delivery completion message.

If a completion message was received, the program, in step  
30 80, modifies the delivery schedule in the schedule table 50 and transmits the updated schedule to the delivery employee. The update may be as simple as changing the status of the delivery to "done" from "in progress." However, if the delivery was not completed by the estimated delivery time, the system re-

calculates the remaining delivery times based on the actual delivery time.

5 In step 82, the program inquires if the last delivery has been made. If the answer is YES, the program ends. Otherwise, the program returns to step 64 to retrieve the next delivery entry from the delivery schedule 50.

10 FIG. 4 is an illustration of a screen 32a of a delivery employee's HHC 32 or browser-based client. The screen 32a displays the updated delivery schedule as stored in the scheduling table 50 and transmitted by the delivery scheduling computer 10. The screen 32 displays a delivery address 70, an estimated delivery time 72, an actual delivery time 74, and a delivery status 76. The delivery schedule is listed according to its delivery sequence (first delivery listed first, second delivery listed second, etc.) After a delivery has been made, the delivery employee selects the particular delivery listing 78 using, for instance, a stylus 32b as the source of the input. The employee then uses the stylus 32 to actuate a "Completed" button or icon 80 on the screen 32a to transmit a delivery completion message. The HHC's or browser-based client's internal clock time-stamps the message, and transmits it to the delivery scheduling computer 10 for re-calculating the delivery times of the remaining deliveries.

15 In an alternative embodiment, the employee manually enters the actual time of the delivery in an input area 82 when transmitting the notification of a completed delivery. This may be desirable if the employee wants to wait before ~~transmitting~~ <sup>entering</sup> the delivery completion message.

20 FIG. 5 is an exemplary layout of a display screen 90 for viewing a delivery schedule over the Internet using the customer's browser-based client, HHC 18, PC 14, or television with an STB 16. According to one embodiment of the invention, 25 the delivery scheduling computer 10 includes a set of user

1 33108/JEC/F179

application modules for allowing the user to access and view the delivery schedule information, and request changes if desired.  
5 The user application modules are programed to display a graphics user interface on the customer's screen 90 to request the customer's name and/or user ID in an information entry area 110. Alternatively, other identification information may be requested from the user, such as a delivery address, a product tracking  
10 number if such is maintained in the schedule table 50, and the like.

Upon receipt of such information, the user application modules search the schedule table for a delivery entry matching the entered information. When a match is made, the user application modules retrieve a delivery location from the delivery address field 50c and an estimated delivery time from the estimated delivery time field 50e for display on the screen 90. Other information such as the status of the delivery or an actual delivery time may also be displayed to the user.  
15

20 A change to a delivery time is made by entering a new time in a time entry area 112. Similarly, a change to a delivery location is made by entering a new location in a location entry area 114. Otherwise, if the customer wants to pick-up the goods scheduled to be delivered, the customer checks a YES option 116 on the screen. Actuation of a submit button 118 transmits the  
25 changes to the delivery scheduling computer 10.

The customer may also access the delivery schedule information and make changes to delivery parameters, by accessing the delivery scheduling computer's TCI server 35 using the  
30 telephone 22 or cellular phone 26. FIG. 6 is a flow diagram of a touch-tone response program according to one embodiment of the invention. The program starts upon detection of an incoming telephonic call on the delivery scheduling computer's phone line. In step 250, the program requests a client ID and password for  
35 authenticating the user. If the user has been authenticated, the

1 33108/JEC/F179

program, in step 251, plays a pre-recorded message of the various menu options available to the customer. For instance, the audio  
5 recording might state: "Please press 1 to listen to a scheduled delivery; press 2 to change a scheduled delivery; or press 3 to exit the system."

In step 252, the program determines if the customer has chosen to listen information about a scheduled delivery. If the  
10 answer is YES, the program, in step 256, retrieves the estimated delivery time, location, status, and/or actual delivery time for the client ID from the schedule table 50. In step 258, program selects one or more appropriate audio recordings corresponding to the retrieved data, and plays the retrieved recordings to the  
15 customer.

In step 260, the program determines if the customer has chosen to change a scheduled delivery. If the answer is YES, the program, in step 264, plays a pre-recorded recording of the delivery parameters that the customer may change. In step 266,  
20 the program determines if the customer has selected to change a delivery time and if so, changes to the delivery time are made in step 270. In step 268, the program determines if the customer has selected to change a delivery location and if so, changes the delivery location are made in step 272. The program ends upon  
25 a determination in steps 274 or 276 that the user has selected an exit option.

Accordingly, there has been brought to the art of delivery scheduling systems, a system and method that allows constant monitoring, updating, and prior notifications to customers of pending deliveries. Estimated delivery times are calculated and transmitted to the customers prior to the actual delivery. Customers therefore need to be at the delivery location only during the times in which a delivery is expected to be made, instead of waiting endlessly for the delivery. If the customer  
35 is not at the scheduled delivery location when a delivery is

1 33108/JEC/F179

scheduled to be made, the customer may alter the time or location  
of the delivery.

5 While the invention has been described with respect to  
particular illustrated embodiments, those skilled in the art and  
technology to which the invention pertains will have no  
difficulty devising variations which in no way depart from the  
scope and spirit of the present invention. Accordingly, the  
10 present invention is not limited to the specific embodiments  
described above, but rather, is defined by the scope of the  
appended claims.

15

20

25

30

35

CLAIMS:

- 5        1. A delivery scheduling and updating system comprising:  
            a delivery scheduling computer electronically maintaining  
            real-time delivery schedule information and delivering a selected  
            portion of the information to a remote customer;  
            a user computer accessible to the remote customer for  
10     receiving the selected portion of the delivery schedule  
            information and transmitting a delivery change request to the  
            delivery scheduling computer;  
            a network linking the delivery scheduling computer to the  
            user computer; and  
15     a set of user application modules associated with the  
            delivery scheduling computer and user computer for allowing the  
            customer to view the selected portion of the delivery schedule  
            information and enter the delivery change request.
- 20     2. The system of claim 1, wherein the selected portion of  
            the delivery schedule information comprises an estimated delivery  
            time and a delivery location.
- 25     3. The system of claim 2, wherein the delivery change  
            request includes a request to change the estimated delivery time.  
*and notification:*  
wired  
wireless  
web-based  
30 browser
4. The system of claim 2, wherein the delivery change  
request includes a request to change the delivery location.
5. The system of claim 1, wherein the user computer is a  
~~hand held computer~~ browser-based terminal.  
→ TV + Set-top box
- 35     6. The system of claim 1 further including an employee  
            computer accessible to a delivery employee for receiving the  
            real-time delivery schedule information from the delivery

scheduling computer, wherein the network links the delivery scheduling computer to the employee computer.

5

7. The system of claim 6, wherein the employee computer transmits a delivery completion message to the delivery scheduling computer upon completion of a scheduled delivery, the delivery completion message including an actual delivery time.

10

8. The system of claim 7, wherein the delivery scheduling computer updates the estimated delivery time of remaining deliveries based on the actual delivery time.

15

9. A delivery scheduling and updating system comprising:  
a delivery scheduling computer electronically maintaining real-time delivery schedule information and transmitting the real-time delivery schedule information to a delivery employee, the delivery scheduling computer further transmitting a selected portion of the delivery schedule information to a remote customer, the selected portion of the delivery schedule information notifying the customer of a scheduled delivery;  
an employee computer accessible to the delivery employee for receiving the real-time delivery schedule information from the delivery scheduling computer and for transmitting a delivery completion message to the delivery scheduling computer upon completion of the scheduled delivery, the delivery completion message including an actual delivery time; and  
a user computer accessible to the remote customer for receiving the selected portion of the delivery schedule information from the delivery scheduling computer;  
a set of user application modules associated with the delivery scheduling computer and the user computer for allowing the customer to view the selected portion of the delivery schedule information.

10. The system of claim 9, wherein the selected portion of  
the delivery schedule information comprises an estimated delivery  
5 time and a delivery location.

11. The system of claim 10, wherein the delivery scheduling  
computer receives the delivery completion message and updates the  
estimated delivery time of remaining deliveries based on the  
10 actual delivery time included in the delivery completion message.

12. A delivery notification computer in a computer network  
enabling communication with a remote customer and a remote  
delivery employee, the delivery notification computer comprising:

15 a memory for storing real-time delivery schedule  
information;

a processor coupled to the memory for creating and updating  
the real-time delivery schedule information;

20 a network connection coupled to the processor for  
transmitting a selected portion of the delivery schedule  
information to the remote customer and for receiving a delivery  
change request from the customer; and

25 a set of user application modules for allowing the customer  
to view the selected portion of the delivery schedule information  
and enter the delivery change request.

13. The delivery notification computer of claim ~~12~~<sup>12</sup>, wherein  
the network connection further receives a delivery completion  
message from the remote delivery employee upon completion of the  
30 scheduled delivery, and wherein the processor updates the  
estimated delivery time of remaining deliveries based on the  
actual delivery time.

14. A delivery notification computer in a computer network  
enabling communication with a remote customer, the delivery  
5 notification computer comprising:

a memory for storing real-time delivery schedule  
information;

10 a network connection coupled to the memory for transmitting  
the real-time delivery schedule information to a delivery  
employee and a selected portion of the delivery schedule  
information to a remote customer, the selected portion of the  
delivery schedule information notifying the customer of a  
scheduled delivery, the network connection further receiving a  
15 delivery completion message from the delivery employee upon  
completion of the scheduled delivery, the delivery completion  
message including an actual delivery time;

20 a processor coupled to the memory and the network connection  
for creating the real-time delivery schedule information and  
updating portions of the delivery schedule information based on  
the actual delivery time.

15. A delivery notification computer in a computer network  
enabling communication with a remote customer and a remote  
delivery employee, the delivery notification computer comprising:

25 means for creating delivery schedule information for a  
plurality of deliveries;

means for updating the delivery schedule information for  
real-time maintenance of the delivery schedule information;

30 means for transmitting a selected portion of the delivery  
schedule information to a remote customer, the selected portion  
of the delivery schedule information notifying the customer of  
a scheduled delivery; and

means for receiving a delivery change request from the  
customer for modifying the delivery schedule information.

16. The computer of claim 15, wherein the means for  
creating the delivery schedule information comprises means for  
5 creating the delivery schedule information based on a shortest-  
path algorithm.

17. The computer of claim 15, wherein the delivery change  
request includes a request to change the estimated delivery time.

10 18. The computer of claim 15, wherein the delivery change  
request includes a request to change the delivery location.

19. The computer of claim 15 further comprising means for  
15 recalculating a delivery cost based on the delivery change  
request.

20. The computer of claim 15 further comprising means for  
transmitting the delivery schedule information to a delivery  
20 employee.

21. The computer of claim 20 further comprising means for  
receiving a delivery completion message of a particular delivery  
from the delivery employee, the delivery completion message  
25 including an actual delivery time.

22. The computer of claim 15 wherein the means for  
transmitting further comprises means for determining when the  
selected portion of the delivery schedule information is to be  
30 transmitted to the remote customer.

23. A delivery scheduling and updating method comprising:  
creating a delivery schedule for a plurality of deliveries;  
updating the delivery schedule for real-time maintenance of  
35 the delivery schedule;

transmitting a selected portion of the delivery schedule to  
a remote customer, the selected portion of the delivery schedule  
5 notifying the customer of a scheduled delivery;  
receiving a delivery change request from the customer; and  
modifying the delivery schedule based on the delivery change  
request.

10 24. The method of claim 23, wherein the creating the  
delivery schedule information comprises creating the delivery  
schedule information based on a shortest-path algorithm.

15 25. The method of claim 23, wherein the delivery change  
request includes a request to change the estimated delivery time.

26. The method of claim 23, wherein the delivery change  
request includes a request to change the delivery location.

20 27. The method of claim 23 further comprising the step of  
recalculating a delivery cost based on the delivery change  
request.

25 28. The method of claim 23 further comprising transmitting  
the delivery schedule information to a delivery employee.

29. The method of claim 28 further comprising receiving a  
delivery completion message of a particular delivery from the  
delivery employee, the delivery completion message including an  
30 actual delivery time.

30. The method of claim 29 further comprising modifying the  
delivery schedule information based on the actual delivery time.

1 33108/JEC/F179

31. The method of claim 23 further comprising determining  
when the selected portion of the delivery schedule information  
5 is to be transmitted to the remote customer.

10

15

20

25

30

35

SYSTEM AND METHOD FOR CONTINUOUS DELIVERY SCHEDULE  
INCLUDING AUTOMATED CUSTOMER NOTIFICATION

5

ABSTRACT OF THE DISCLOSURE

A system and method for continuously monitoring and updating delivery schedules based on completed deliveries and modifications made by the customers. A delivery scheduling computer electronically stores and updates delivery schedule information. Prior to a scheduled delivery, the delivery scheduling computer notifies the customer of an estimated time of the delivery. The notification is made to a customer's PC, browser-based client, hand-held computer or set-top box. Conventional communication methods may also be utilized such as a telephone, pager, or cellular phone. If the customer desires to make a change to the delivery, such as the time of the delivery or the delivery location, the customer transmits a delivery change request. The delivery schedule is then modified accordingly. Employees receive updated delivery schedule information through a hand-held computer. Alternatively, the employee uses a browser-based client to log onto a central computer to view the updated schedule. Upon completion of a scheduled delivery, the employee uses the hand-held computer or browser-based client to transmit a delivery completion message to the delivery scheduling computer. The delivery completion message includes an actual delivery time which the delivery scheduling computer uses to update the estimated delivery times of the remaining deliveries.

30

JEC PAS187714.1--5/17/00 5:30 PM

35

CLAIMS:

- 5 1. A delivery scheduling and updating system comprising:  
a delivery scheduling computer electronically maintaining  
real-time delivery schedule information and delivering a selected  
portion of the information to a remote customer;
- 10 a user computer accessible to the remote customer for  
receiving the selected portion of the delivery schedule  
information and transmitting a delivery change request to the  
delivery scheduling computer;
- 15 a network linking the delivery scheduling computer to the  
user computer; and
- 20 a set of user application modules associated with the  
delivery scheduling computer and user computer for allowing the  
customer to view the selected portion of the delivery schedule  
information and enter the delivery change request.
- 25 2. The system of claim 1, wherein the selected portion of  
the delivery schedule information comprises an estimated delivery  
time and a delivery location.
- 30 3. The system of claim 2, wherein the delivery change  
request includes a request to change the estimated delivery time.
- 35 4. The system of claim 2, wherein the delivery change  
request includes a request to change the delivery location.
5. The system of claim 1, wherein the user computer is a  
wired terminal.
6. The system of claim 1, wherein the user computer is a  
wireless terminal.

7. The system of claim 1, wherein the user computer is a browser-based client.

5

8. The system of claim 1 further including an employee computer accessible to a delivery employee for receiving the real-time delivery schedule information from the delivery scheduling computer, wherein the network links the delivery scheduling computer to the employee computer.

9. The system of claim 8, wherein the employee computer transmits a delivery completion message to the delivery scheduling computer upon completion of a scheduled delivery, the delivery completion message including an actual delivery time.

10. The system of claim 9, wherein the delivery scheduling computer updates the estimated delivery time of remaining deliveries based on the actual delivery time.

20

11. A delivery scheduling and updating system comprising:  
a delivery scheduling computer electronically maintaining real-time delivery schedule information and transmitting the real-time delivery schedule information to a delivery employee,  
the delivery scheduling computer further transmitting a selected portion of the delivery schedule information to a remote customer, the selected portion of the delivery schedule information notifying the customer of a scheduled delivery;  
an employee computer accessible to the delivery employee for receiving the real-time delivery schedule information from the delivery scheduling computer and for transmitting a delivery completion message to the delivery scheduling computer upon completion of the scheduled delivery, the delivery completion message including an actual delivery time; and

35

5 a user computer accessible to the remote customer for receiving the selected portion of the delivery schedule information from the delivery scheduling computer;

a set of user application modules associated with the delivery scheduling computer and the user computer for allowing the customer to view the selected portion of the delivery schedule information.

10

12. The system of claim 11, wherein the selected portion of the delivery schedule information comprises an estimated delivery time and a delivery location.

15

13. The system of claim 12, wherein the delivery scheduling computer receives the delivery completion message and updates the estimated delivery time of remaining deliveries based on the actual delivery time included in the delivery completion message.

20

14. The system of claim 11, wherein the employee computer is a wired terminal.

15. The system of claim 11, wherein the employee computer is a wireless terminal.

25

16. The system of claim 11, wherein the employee computer is a browser-based client.

30

17. A delivery notification computer in a computer network enabling communication with a remote customer and a remote delivery employee, the delivery notification computer comprising:

a memory for storing real-time delivery schedule information;

35 a processor coupled to the memory for creating and updating the real-time delivery schedule information;

5 a network connection coupled to the processor for transmitting a selected portion of the delivery schedule information to the remote customer and for receiving a delivery change request from the customer; and

a set of user application modules for allowing the customer to view the selected portion of the delivery schedule information and enter the delivery change request.

10

15 18. The delivery notification computer of claim 17, wherein the network connection further receives a delivery completion message from the remote delivery employee upon completion of the scheduled delivery, and wherein the processor updates the estimated delivery time of remaining deliveries based on the actual delivery time.

20 19. A delivery notification computer in a computer network enabling communication with a remote customer, the delivery notification computer comprising:

a memory for storing real-time delivery schedule information;

25 a network connection coupled to the memory for transmitting the real-time delivery schedule information to a delivery employee and a selected portion of the delivery schedule information to a remote customer, the selected portion of the delivery schedule information notifying the customer of a scheduled delivery, the network connection further receiving a delivery completion message from the delivery employee upon completion of the scheduled delivery, the delivery completion message including an actual delivery time;

30 a processor coupled to the memory and the network connection for creating the real-time delivery schedule information and updating portions of the delivery schedule information based on 35 the actual delivery time.

20. A delivery notification computer in a computer network  
enabling communication with a remote customer and a remote  
5 delivery employee, the delivery notification computer comprising:

means for creating delivery schedule information for a  
plurality of deliveries;

means for updating the delivery schedule information for  
real-time maintenance of the delivery schedule information;

10 means for transmitting a selected portion of the delivery  
schedule information to a remote customer, the selected portion  
of the delivery schedule information notifying the customer of  
a scheduled delivery; and

15 means for receiving a delivery change request from the  
customer for modifying the delivery schedule information.

21. The computer of claim 20, wherein the means for  
creating the delivery schedule information comprises means for  
creating the delivery schedule information based on a shortest-  
20 path algorithm.

22. The computer of claim 20, wherein the delivery change  
request includes a request to change the estimated delivery time.

25 23. The computer of claim 20, wherein the delivery change  
request includes a request to change the delivery location.

30 24. The computer of claim 20 further comprising means for  
recalculating a delivery cost based on the delivery change  
request.

25. The computer of claim 20 further comprising means for  
transmitting the delivery schedule information to a delivery  
employee.

26. The computer of claim 25 further comprising means for receiving a delivery completion message of a particular delivery  
5 from the delivery employee, the delivery completion message including an actual delivery time.

27. The computer of claim 20 wherein the means for transmitting further comprises means for determining when the  
10 selected portion of the delivery schedule information is to be transmitted to the remote customer.

28. A delivery scheduling and updating method comprising:  
15 creating a delivery schedule for a plurality of deliveries;  
updating the delivery schedule for real-time maintenance of the delivery schedule;  
transmitting a selected portion of the delivery schedule to a remote customer, the selected portion of the delivery schedule notifying the customer of a scheduled delivery;  
20 receiving a delivery change request from the customer; and modifying the delivery schedule based on the delivery change request.

29. The method of claim 28, wherein the creating the delivery schedule information comprises creating the delivery schedule information based on a shortest-path algorithm.

30 30 . The method of claim 28, wherein the delivery change request includes a request to change the estimated delivery time.

31. The method of claim 28, wherein the delivery change request includes a request to change the delivery location.

1 33108/JEC/F179

5 32. The method of claim 28 further comprising the step of  
recalculating a delivery cost based on the delivery change  
request.

33. The method of claim 28 further comprising transmitting  
the delivery schedule information to a delivery employee.

10 34. The method of claim 33 further comprising receiving a  
delivery completion message of a particular delivery from the  
delivery employee, the delivery completion message including an  
actual delivery time.

15 35. The method of claim 34 further comprising modifying the  
delivery schedule information based on the actual delivery time.

20 36. The method of claim 28 further comprising determining  
when the selected portion of the delivery schedule information  
is to be transmitted to the remote customer.

25

30

35

SYSTEM AND METHOD FOR CONTINUOUS DELIVERY SCHEDULE  
INCLUDING AUTOMATED CUSTOMER NOTIFICATION

5

ABSTRACT OF THE DISCLOSURE

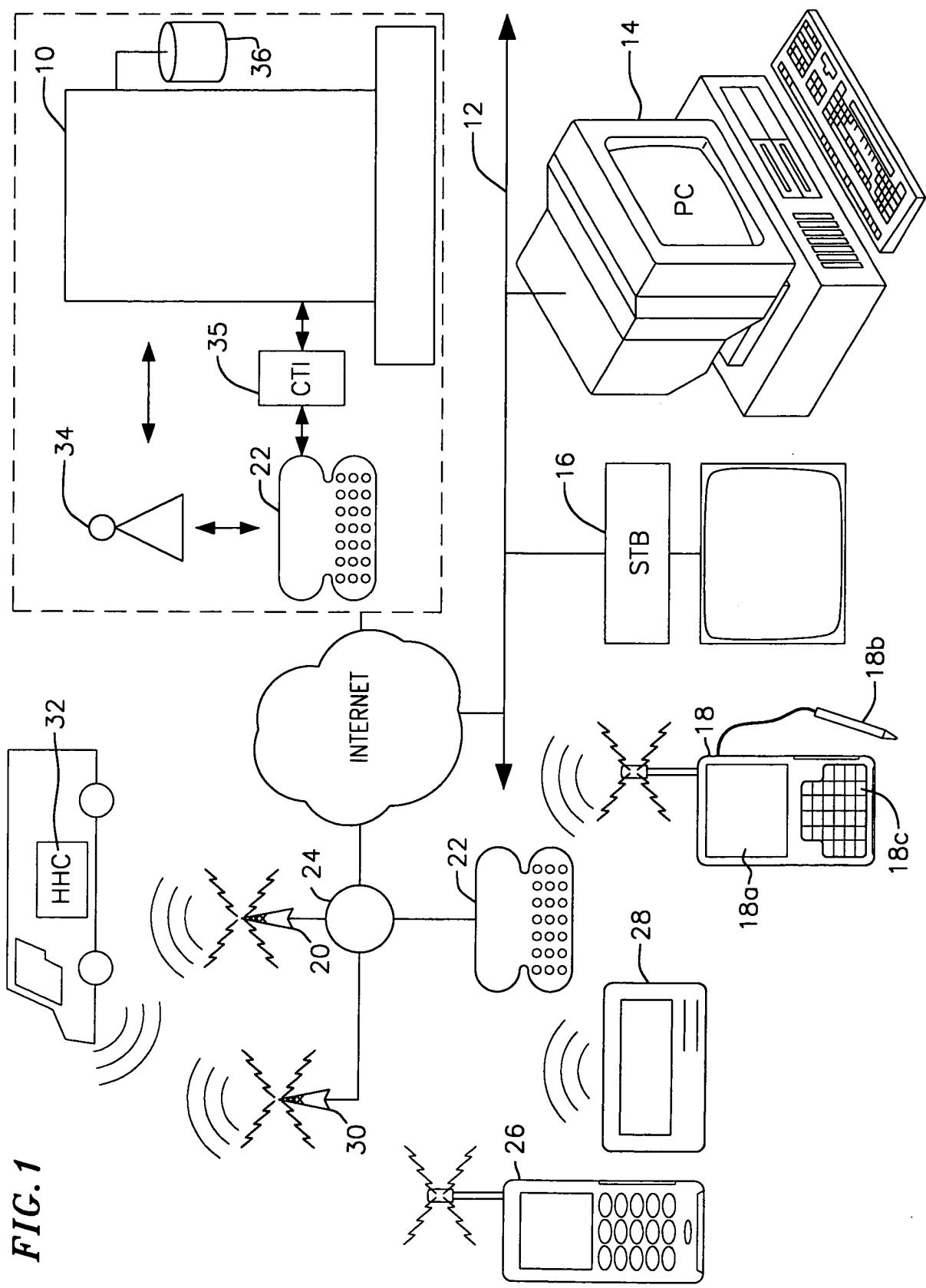
A system and method for continuously monitoring and updating delivery schedules based on completed deliveries and modifications made by the customers. A delivery scheduling computer electronically stores and updates delivery schedule information. Prior to a scheduled delivery, the delivery scheduling computer notifies the customer of an estimated time of the delivery. The notification is made to a customer's PC, browser-based client, hand-held computer or set-top box. Conventional communication methods may also be utilized such as a telephone, pager, or cellular phone. If the customer desires to make a change to the delivery, such as the time of the delivery or the delivery location, the customer transmits a delivery change request. The delivery schedule is then modified accordingly. Employees receive updated delivery schedule information through a hand-held computer. Alternatively, the employee uses a browser-based client to log onto a central computer to view the updated schedule. Upon completion of a scheduled delivery, the employee uses the hand-held computer or browser-based client to transmit a delivery completion message to the delivery scheduling computer. The delivery completion message includes an actual delivery time which the delivery scheduling computer uses to update the estimated delivery times of the remaining deliveries.

30

DAA PAS187714.1--5/23/00 11:37 AM

35

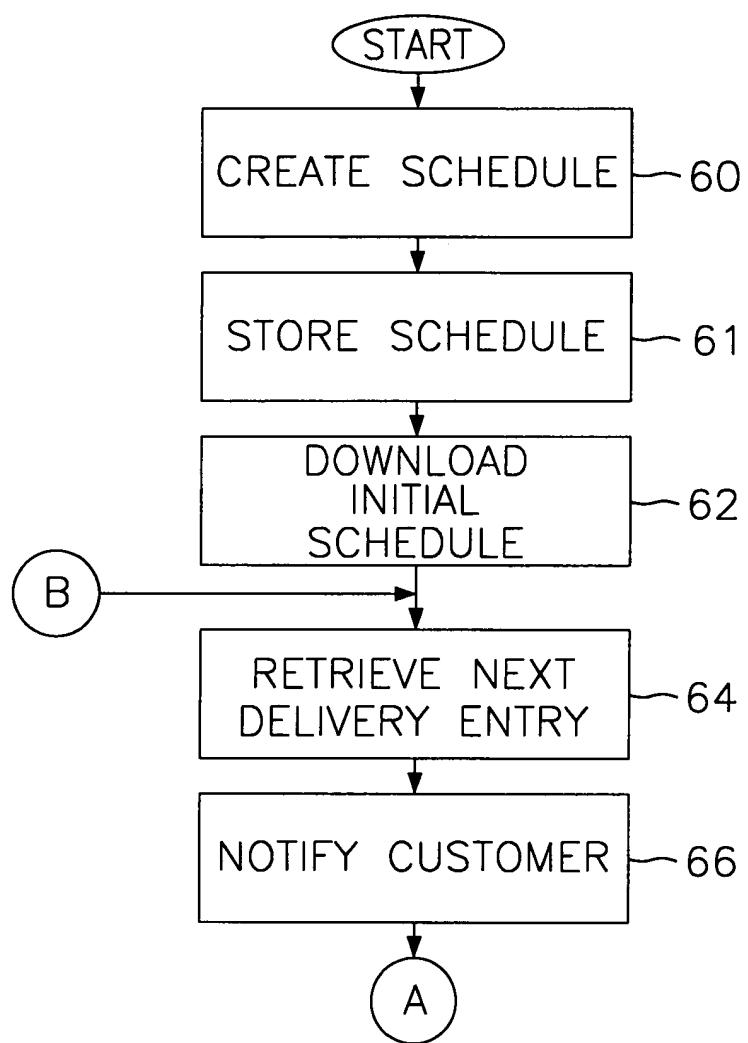
*FIG. 1*



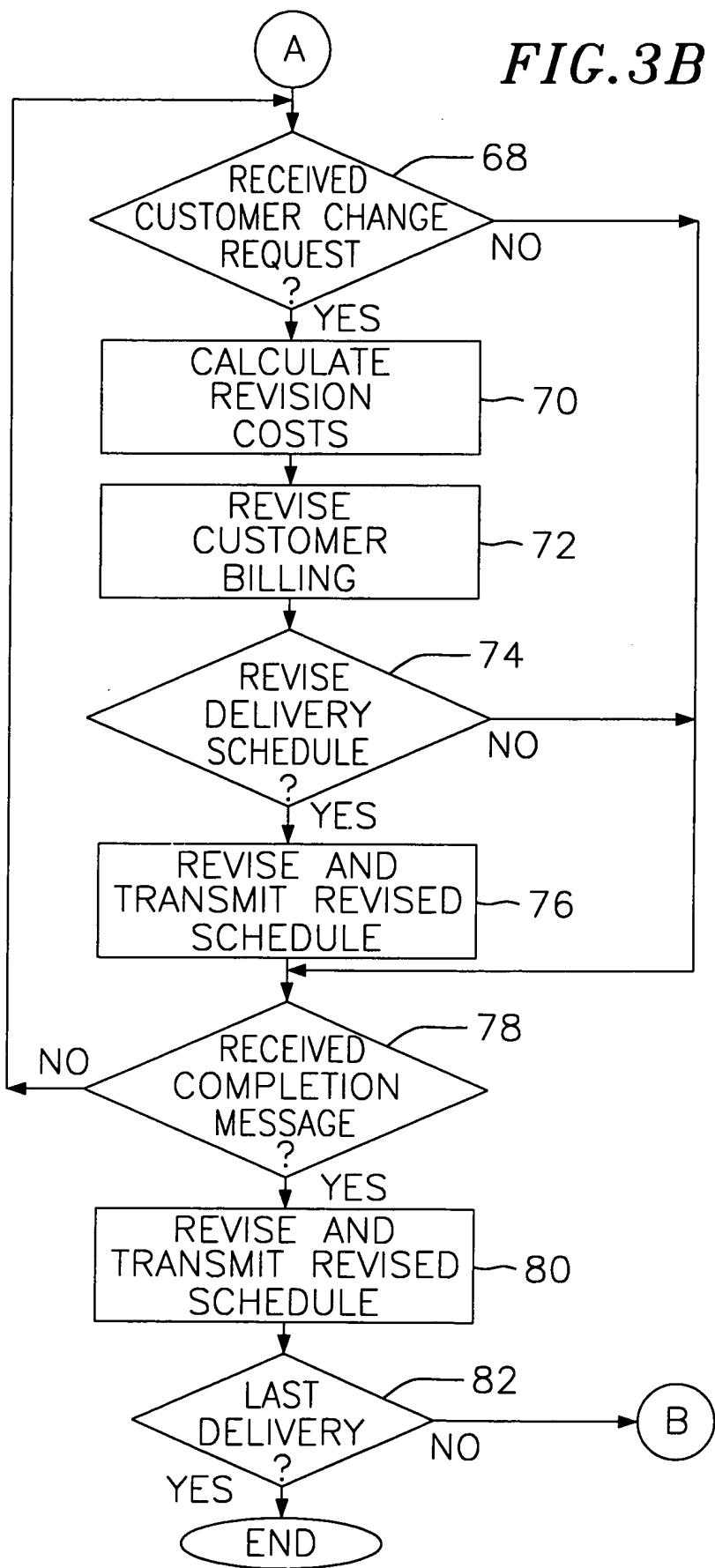
*FIG. 2*

CUSTOMER ID	CUSTOMER NAME	DELIVERY ADDRESS	DELIVERY SEQUENCE	EST. DEL. TIME	ACTUAL DEL. TIME	STATUS	PRIOR NOTIFY	50g	50h
001	JOHN DOE	102 STATE ST.	3	2:15 PM		W	30 MIN. 213-111-111		
002	JANE DOE	21 MAIN ST.	1	1:00 PM	1:10 PM	D	30 MIN. 310-111-111		
003	AMY DOE	100 STATE ST.	2	1:45 PM		P	45 MIN. 213-222-2222		
004	LESLIE DOE	100 STATE ST.				B	45 MIN. LD@ABC.COM		
							•		

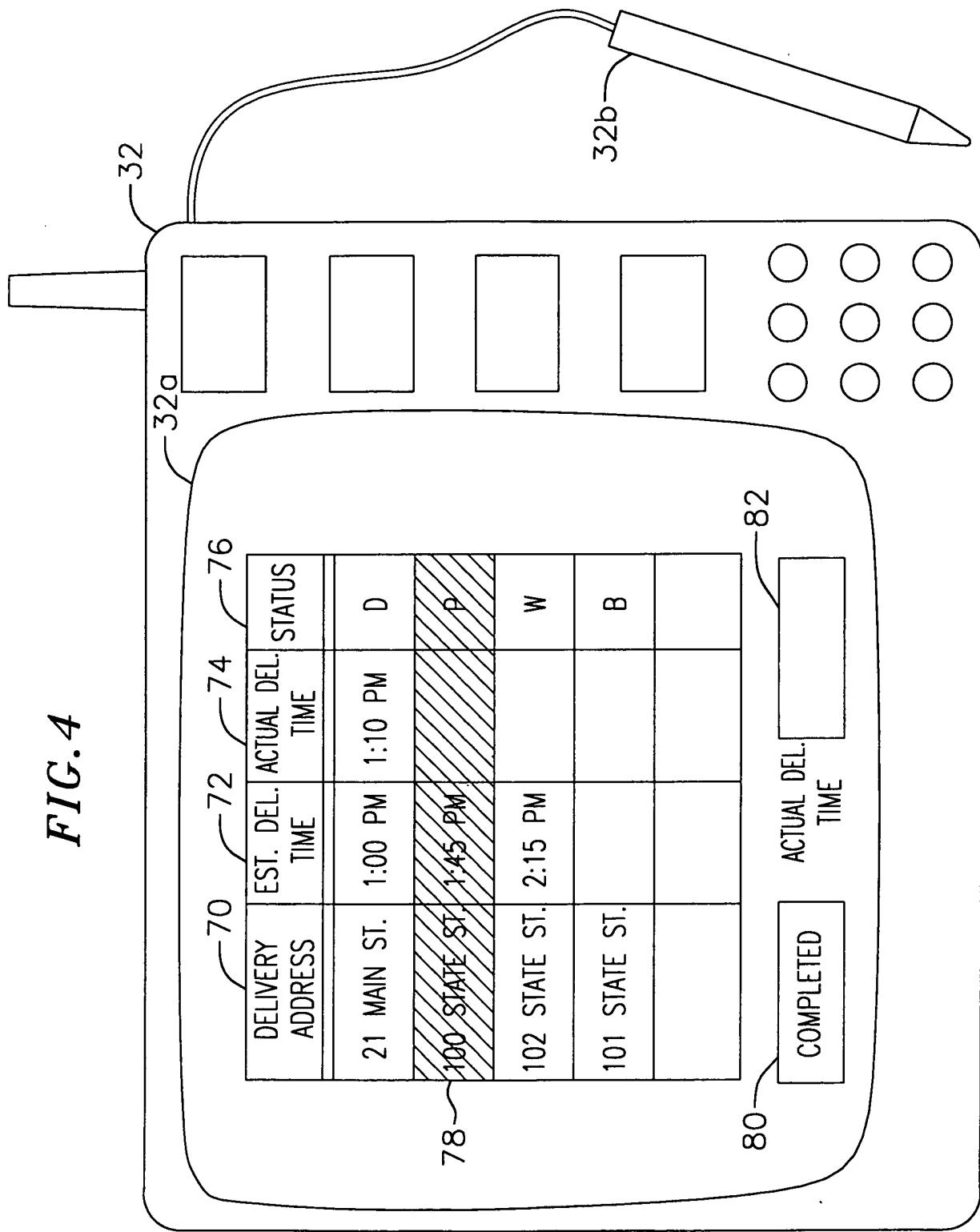
*FIG.3A*



*FIG. 3B*



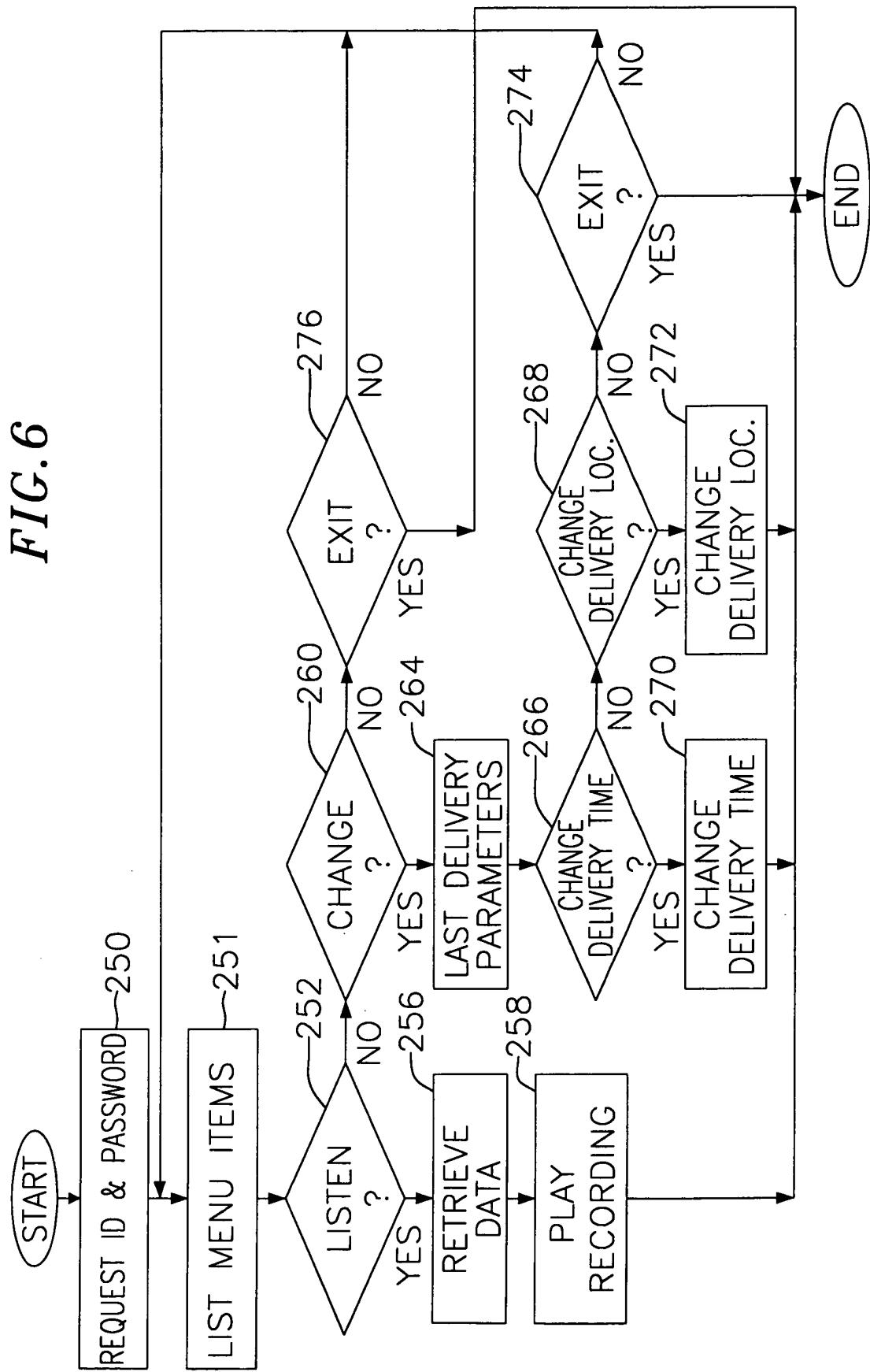
*FIG. 4*



**FIG.5**

ENTER YOUR NAME OR USER ID :	<input type="text" value="ABC 123"/>	90
DELIVERY LOCATION :	21 MAIN ST.	
ESTIMATED DEL. TIME :	1:00PM	
STATUS :	DONE	
ACTUAL DEL. TIME :	1:15PM	
CHANGE DEL. TIME TO :	<input type="text"/>	112
CHANGE DEL. LOCATION TO :	<input type="text"/>	
WILL PICK-UP :	<input checked="" type="radio"/> YES <input type="radio"/> NO	114
	<input type="button" value="SUBMIT"/>	118

FIG. 6



**From:** Josephine Chang  
**To:** internet:msone@iclretail.com  
**Date:** 5/23/00 12:04PM  
**Subject:** Final draft of application (FIRST 98011)

Mr. Sone:

Please find attached a finalized draft of the above-referenced application. We are in the process of making edits to the drawings and will fax a finalized set in a couple of days. Please review the application and the drawings for completeness and accuracy once you receive them. If everything is in order, you may sign the Declaration/Power of Attorney and Assignment documents, and forward them to me in the Pasadena Office for filing with the U.S. Patent and Trademark Office. However, if you find any other corrections, please contact me first before signing the documents.

Let me know if you have any questions in regards to this matter.

- Josephine.

Josephine E. Chang, Esq.  
jec@cph.com

The information in this communication and any attached documents contain information from the law firm of Christie, Parker and Hale, LLP that may be confidential and/or privileged. If you are not the intended recipient, or an agent responsible for delivering it to the intended recipient, you may not read, copy, distribute or use this information. If you have received this transmission in error, please notify the sender immediately by reply e-mail and then delete all electronic copies and destroy any hard copies.

CC: internet:kmatsumori@iclretail.com

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**